STC03DE220HV

HYBRID EMITTER SWITCHED BIPOLAR TRANSISTOR
ESBT® 2200 V - 3 A - 0.55 Ω

Preliminary Data

Table 1: General Features

$V_{CS(ON)}$	I_C	$R_{CS(ON)}$
1 V	3 A	0.55 Ω

- LOW EQUIVALENT ON RESISTANCE
- VERY FAST-SWITCH, UP TO 150 kHz
- VERY LOW C_{ISS} DRIVEN BY RG = 4.7 Ω

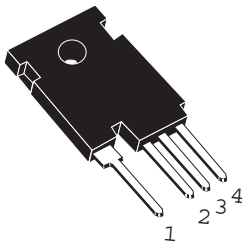
APPLICATION

- AUX SMPS FOR THREE PHASE MAINS

DESCRIPTION

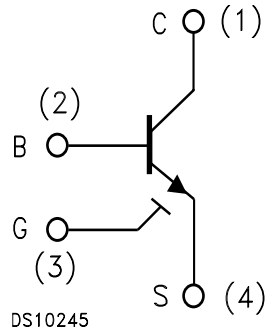
The STC03DE220HV is manufactured in a hybrid structure, using dedicated high voltage Bipolar and low voltage MOSFET technologies, aimed to providing the best performance in ESBT topology. The STC03DE220HV is designed for use in aux flyback smps for any three phase application.

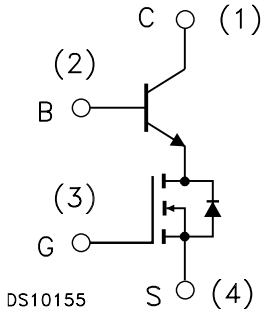
Figure 1: Package



TO247-4L HV

Figure 2: Internal Schematic Diagram





Electrical Symbol **Device Structure**

Table 2: Order Code

Part Number	Marking	Package	Packaging
STC03DE220HV	C03DE220HV	TO247-4L HV	TUBE

Table 3: Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
$V_{CS(SS)}$	Collector-Source Voltage (V_{BS} = V_{GS} = 0 V)	2200	V
$V_{BS(OS)}$	Base-Source Voltage (I_C= 0, V_{GS} = 0 V)	30	V
$V_{SB(OS)}$	Source-Base Voltage (I_C= 0, V_{GS} = 0 V)	9	V
V_{GS}	Gate-Source Voltage	± 20	V
I_C	Collector Current	3	A
I_{CM}	Collector Peak Current (t_p < 5ms)	6	A
I_B	Base Current	2	A
I_{BM}	Base Peak Current (t_p < 1ms)	4	A
P_{tot}	Total Dissipation at T_C = 25 °C	195	W
T_{stg}	Storage Temperature	-65 to 150	°C
T_J	Max. Operating Junction Temperature	150	°C

Table 4: Thermal Data

Symbol	Parameter		Unit
$R_{thj\text{-}case}$	Thermal Resistance Junction-Case Max	0.64	°C/W

Table 5: Electrical Characteristics (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CS(SS)}$	Collector-Source Current (V_{BS} = V_{GS} = 0 V)	$V_{CS(SS)}$ = 2200 V			100	µA
$I_{BS(OS)}$	Base-Source Current (I_C = 0 , V_{GS} = 0 V)	$V_{BS(OS)}$ = 30 V			10	µA
$I_{SB(OS)}$	Source-Base Current (I_C = 0 , V_{GS} = 0 V)	$V_{SB(OS)}$ = 9 V			100	µA
$I_{GS(OS)}$	Gate-Source Leakage	V_{GS} = ± 20 V			500	nA
$V_{CS(ON)}$	Collector-Source ON Voltage	V_{GS} = 10 V I_C = 3 A I_B = 0.3 A V_{GS} = 10 V I_C = 6 A I_B = 1.2 A		1 0.6		V V
h_{FE}	DC Current Gain	I_C = 3 A V_{CS} = 1 V V_{GS} = 10 V I_C = 6 A V_{CS} = 1 V V_{GS} = 10 V		10 5		
$V_{BS(ON)}$	Base-Source ON Voltage	V_{GS} = 10 V I_C = 3 A I_B = 0.3 A V_{GS} = 10 V I_C = 6 A I_B = 1.2 A		0.9 1.2		V V
$V_{GS(th)}$	Gate Threshold Voltage	V_{BS} = V_{GS} I_B = 250 µA	1.5	2.2	3	V
C_{iss}	Input Capacitance	V_{CS} = 25 V f = 1MHZ V_{GS} = V_{CB} = 0		750		pF
$Q_{GS(tot)}$	Gate-Source Charge	V_{CS} = 15 V V_{GS} = 10 V V_{CB} = 0 I_C = 1.8 A		12.5		nC
 t_s t_f	INDUCTIVE LOAD Storage Time Fall Time	TBD		TBD		 ns ns

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
	INDUCTIVE LOAD					
t_s	Storage Time	TBD		TBD		ns
t_f	Fall Time					ns
V_{CSW}	Maximum Collector-Source Voltage Switched Without Snubber	R_G = 47 Ω h_{FE} = 5 A I_C = 3 A	2200			V
$V_{CS(dyn)}$	Collector-Source Dynamic Voltage (500 ns)	TBD		TBD		V
$V_{CS(dyn)}$	Collector-Source Dynamic Voltage (1µs)	TBD		TBD		V

TO247-4L HV MECHANICAL DATA

DIM.	mm.		
	MIN.	TYP	MAX.
A	4.85		5.15
A1	2.20	2.50	2.60
A2		1.27	
b	0.95	1.10	1.30
b2	2.50		2.90
c	0.40		0.80
D	23.85	24	24.15
D1		21.50	
E	15.45	15.60	15.75
e	2.54		
e1	5.08		
L	10.20		10.80
L1	2.20	2.50	2.80
L2		18.50	
L3		3	
øP	3.55		3.65
S		5.50	

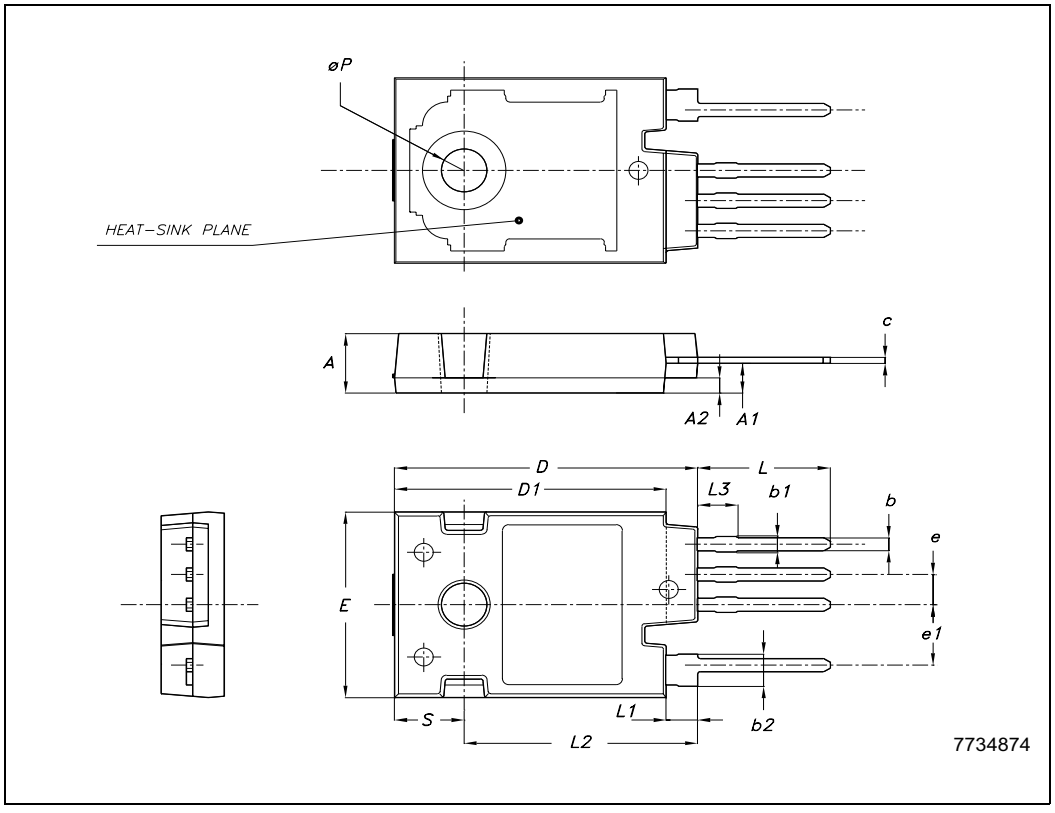


Figure 6: Revision History

Date	Release	Change Designator
08-Jul-2005	1	First Release.

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